



MOVIRACK®

Interlake
MECALUX



General Characteristics of the Movirack® System

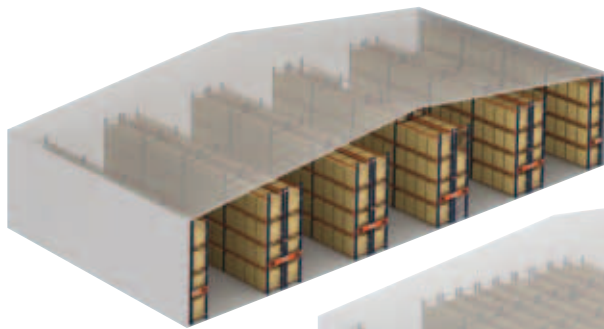
With the Movirack® system, shelving units become more compact and their storage capacity considerably increases, without sacrificing direct access to any item in stock.

The shelving units are installed over guided Mobile bases that slide laterally, eliminating the need for multiple fixed aisles. With Movirack®, the aisles open up only when the operator requests access.

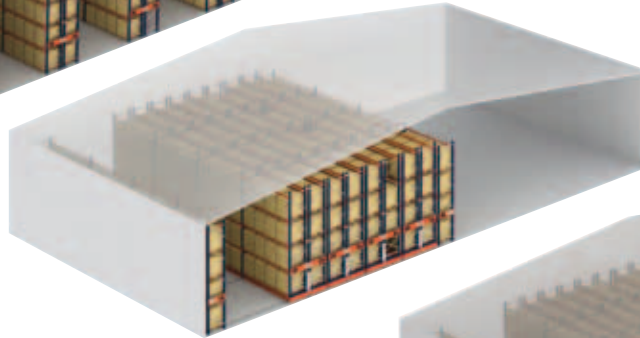
Aisles are opened either automatically by remote control or manually by flicking a switch.

The mobile bases have motors, sliders, electronics and several systems to guarantee a safe, efficient operation.

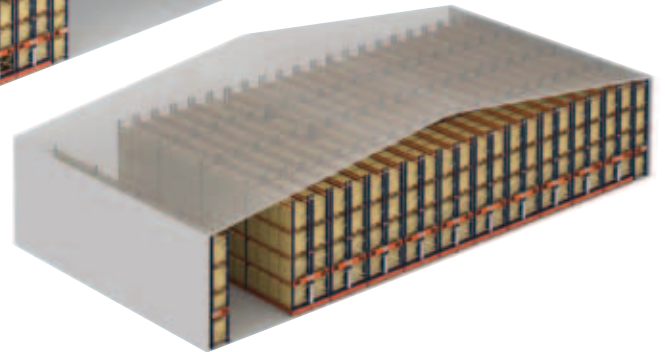




Warehouse using conventional pallet storage



Warehouse using Mobile bases
The same capacity with a single aisle occupies less space

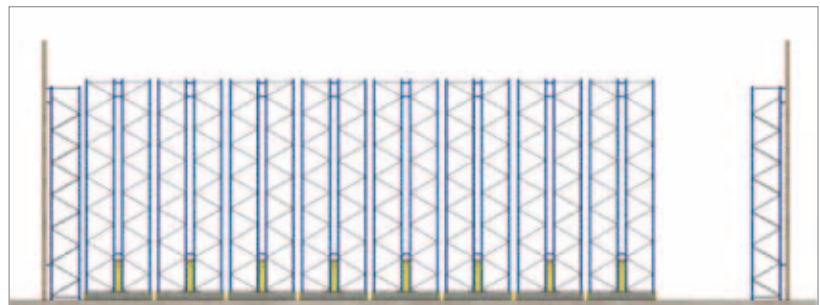


Warehouse using Mobile bases
Utilizing the most space possible considerably increases storage capacity

Advantages

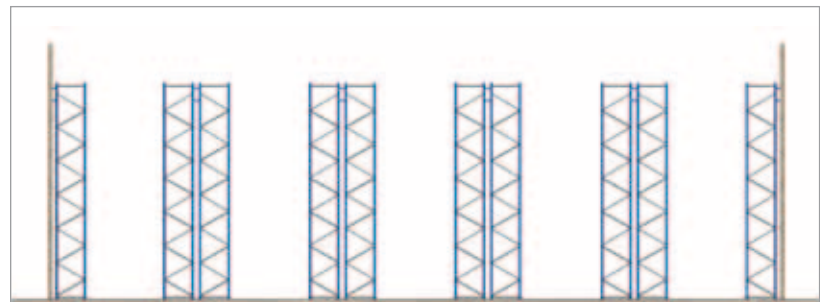
Direct access to any pallet in storage. Since these shelving units are installed over bases, merely by opening up the corresponding aisle provides direct access to the desired pallet.

Makes the most of available space. This is possible due to two basic premises: increase storage capacity and reduction of storage area to build.

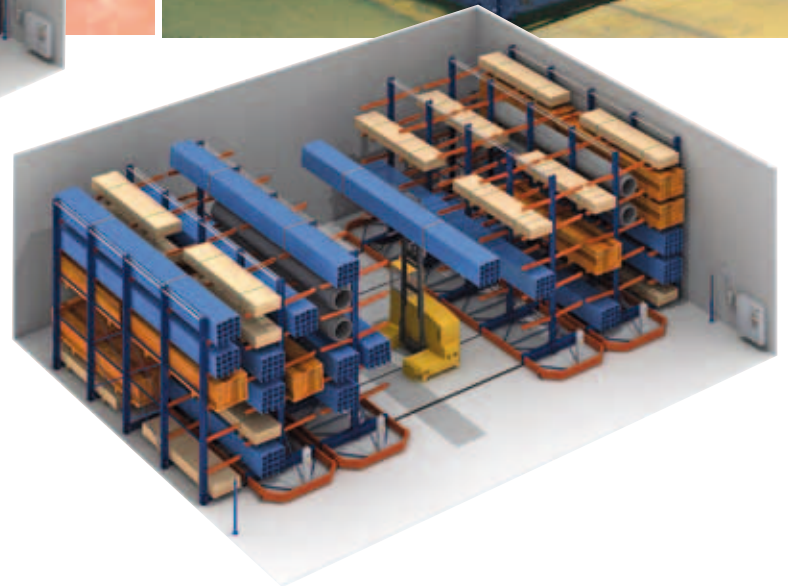


Example of a pallet warehouse using mobile bases

This figure illustrates the sizable increase in capacity that a mobile base system provides (from 80 to 120% more pallets than a conventional pallet system). This increase depends on the type of forklift being used, the facility size and the number of open aisles required.



Example of a conventional pallet warehouse



General features of the system

Applications

The Movirack® system has multiple applications which can be accomplished using either Interlake or Mecalux rack.

Palletized product storage

- General Storage
- Product with average or low-level rotation
- Refrigerated storerooms
- Intermediary or shopping warehouses

Warehouse with cantilever shelves

- For sheets, reels, and large or irregular-sized products

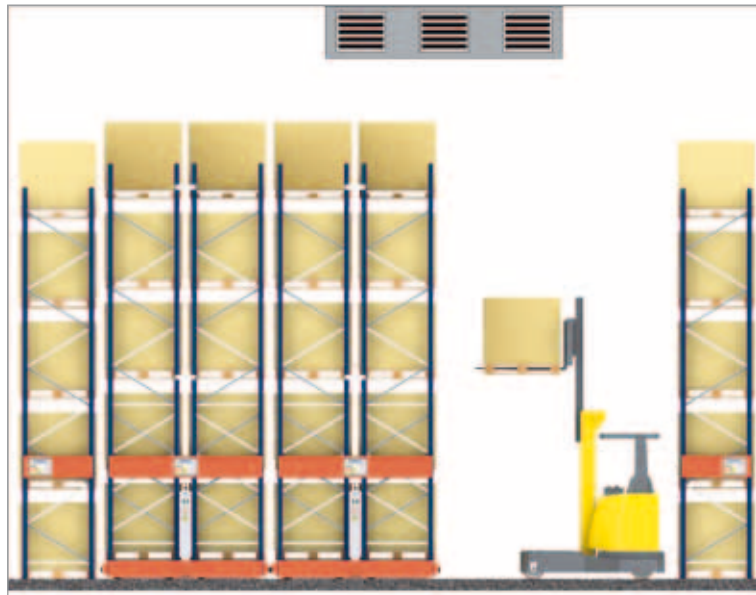
In this case, the same use as for palletized products is applied.

Conventional forklifts can be used (counterweighted or reach trucks) or specific for long products (lateral load or four-pronged fork lifts).

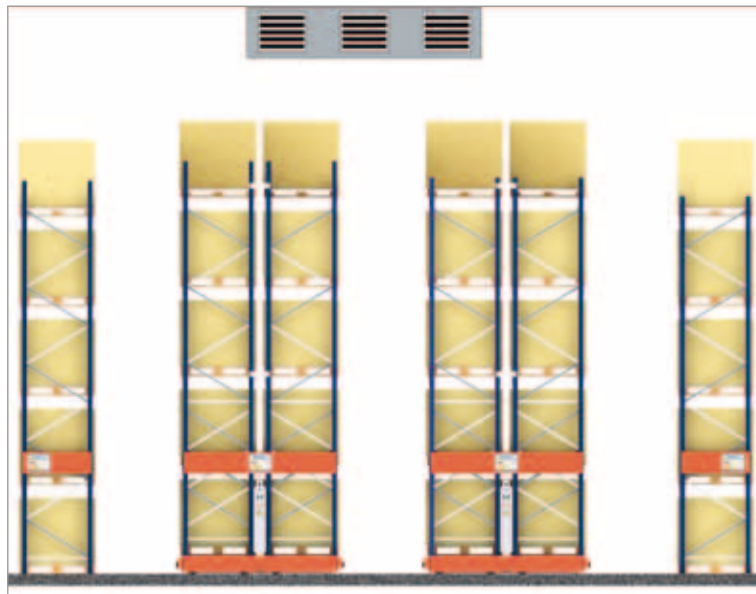
Refrigerated Storerooms

The Movirack® system is ideal for low or medium-height refrigerated and freezer storerooms:

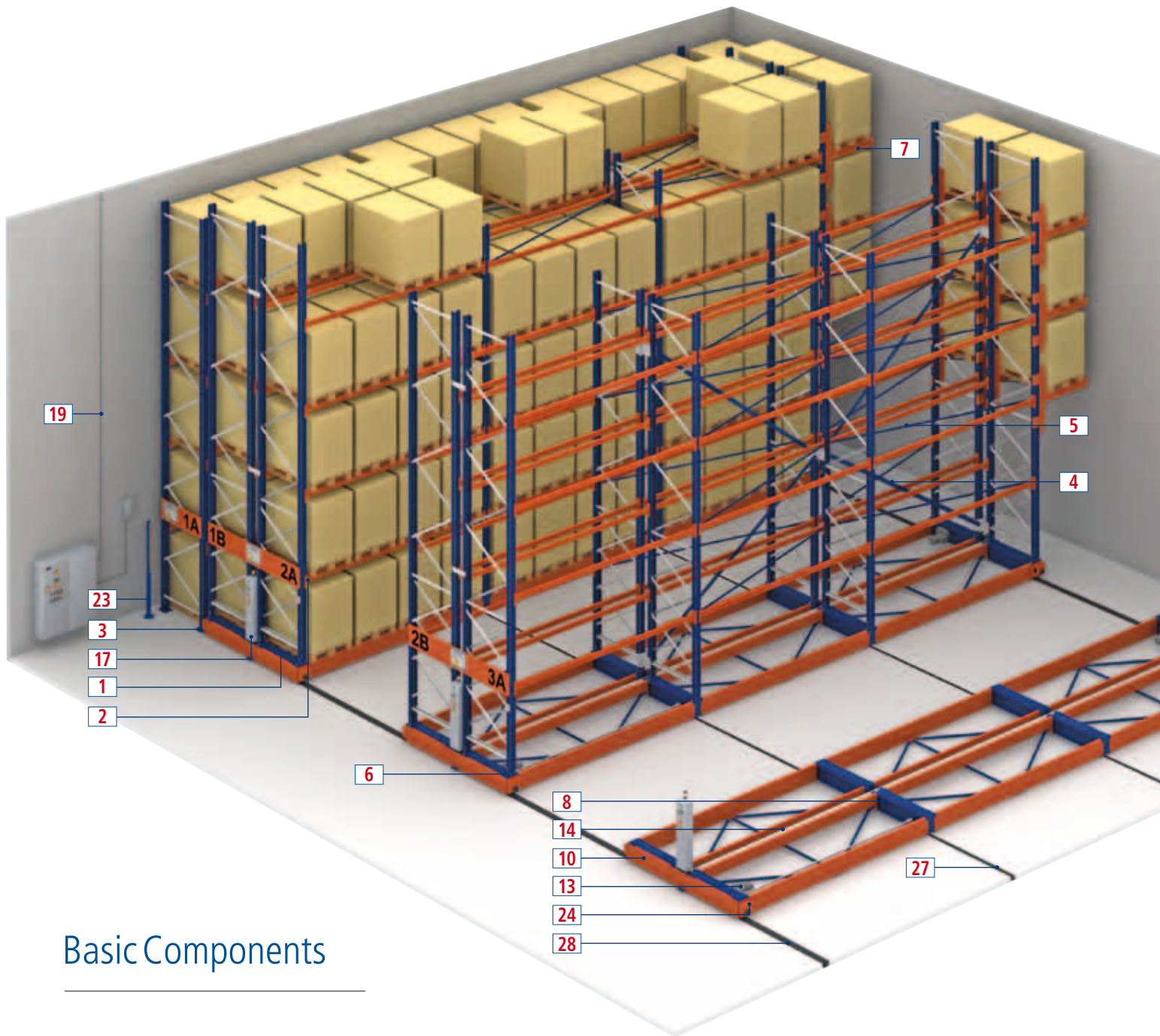
- Since it's a compact system, its investment is quickly recovered.
- Every pallet can be directly accessed (very useful when there are a few pallets of each item).
- There are greater energy savings to generate cold air, since the air is distributed over a larger number of pallets in storage. The expense per pallet is reduced.
- There is better air circulation in down times when using the parking option, which increases the separation between shelves to spread the aisle space more equidistantly.
- With the parking option, if enough space is available, aisles can be used to pick individual items from the lower shelves.
- The use of conventional forklift allows for direct access from the dock area to different points on the shelving unit.



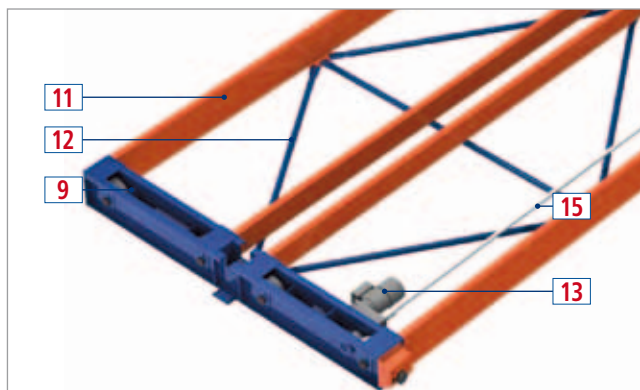
Aisle option



Parking Option



Basic Components

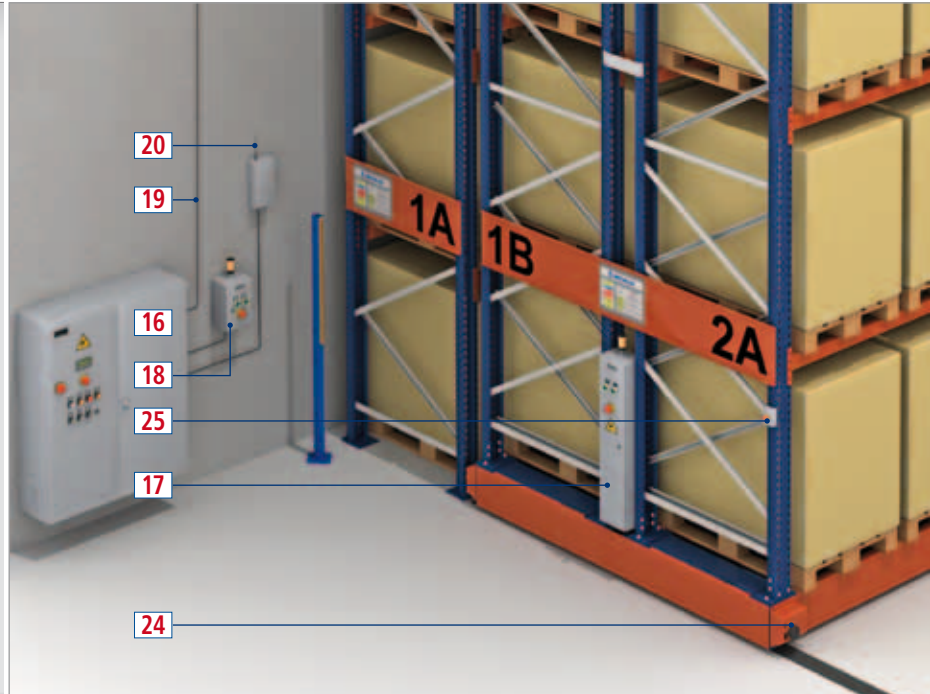


Shelves

- 1/Frame/upright
- 2/Beam and mechanical safety lock
- 3/Anchorage and fasteners
- 4/Frame brace
- 5/Horizontal brace
- 6/Base fasteners
- 7/Cantilever beam (optional)

Mobile Bases

- 8/Carrier roller/carrier driver
- 9/Carrier guide
- 10/Carrier end
- 11/Base beam
- 12/Rigidity bracing
- 13/Motor
- 14/Cable channel
- 15/Drive shaft

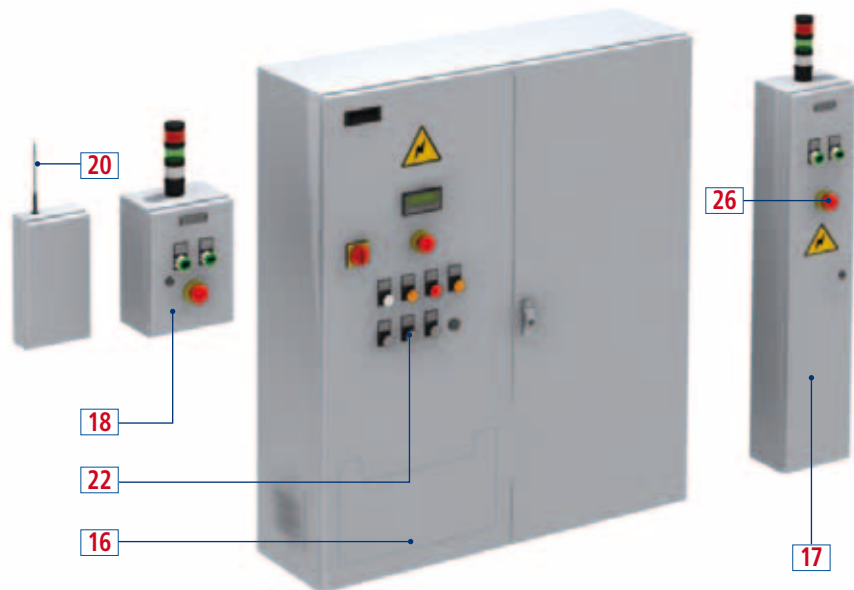


Safety and control parts

- 16/Exterior main power panel
- 17/Remote power panel
- 18/Control panel
- 19/Signal and power cables
- 20/Remote control antenna
- 21/Remote control
- 22/Control button pad
- 23/Exterior safety barrier
- 24/Interior safety barrier and proximity photocell
- 25/Reset button
- 26/Emergency button

Built-in tracks

- 27/Roller tracks
- 28/Guide track



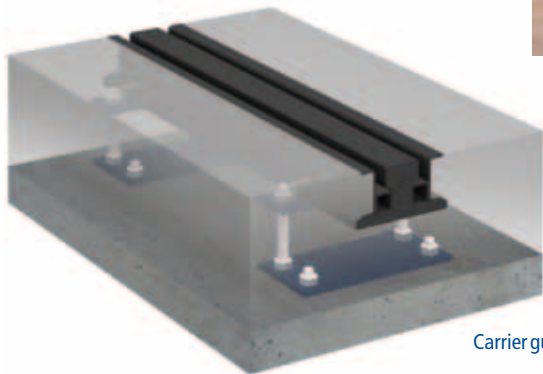
Basic Components

Building Systems

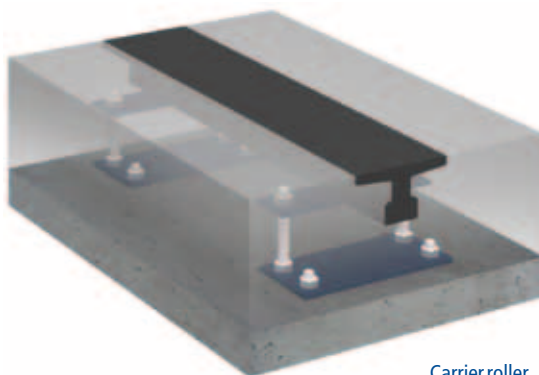
Built-in Rack

The moving shelving units travel over tracks which first have been leveled, fastened together and then sunk into the floor.

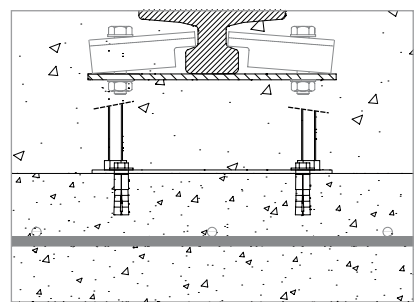
There are smooth tracks and guide tracks that match with the wheels on the carrier. The number of tracks depends on the characteristics of each facility and can be installed in many different ways.



Carrier guide

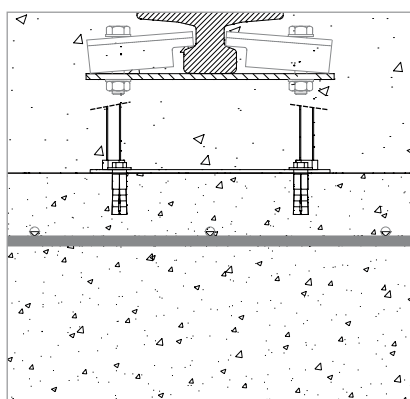


Carrier roller



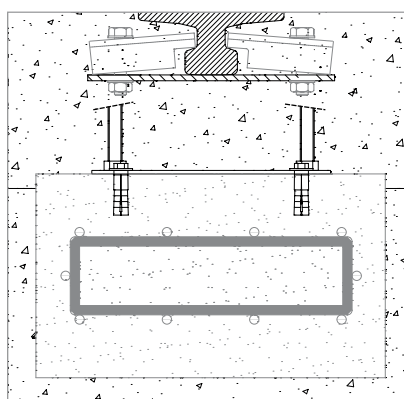
Over a concrete subfloor

This system is most often used over a newly built floor.



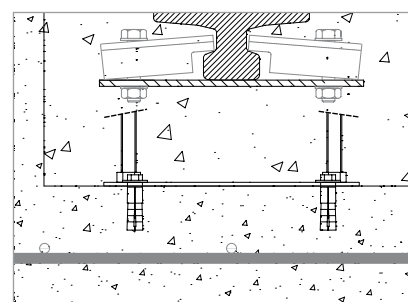
Over an existing floor with posterior fill

Appropriate when the floor has adequate strength but new flooring is to be laid.



Over an existing floor with channels and spreader beams

Appropriate when the floor strength is insufficient or undetermined.



Over an existing floor with channels

Valid when the floor can handle the units without compromising its strength.



Shelves

Facilities tend to be formed by fixing shelving units composed of either Interlake or Mecalux rack with access on either one or both sides, or by mobile shelving units that always have access on both sides.

The structural systems for both types are the same as conventional pallet rack; however mobile shelving units must be equipped with arches to provide them the stability to withstand forces produced when starting and stopping.

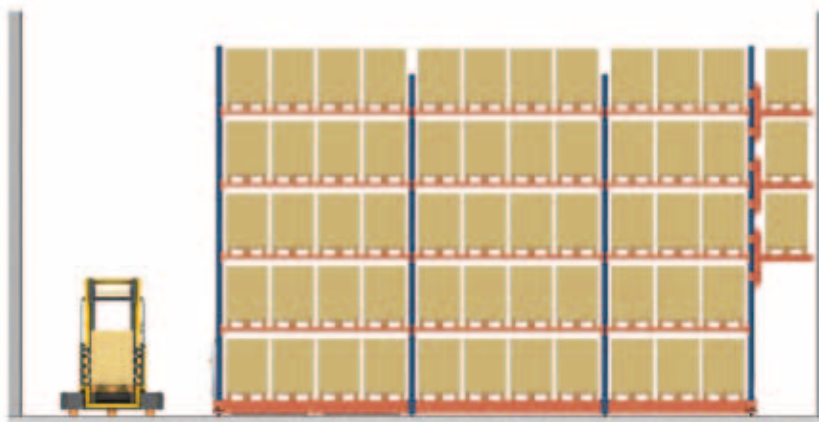
Levels can be set for two, three, or four pallets, depending on the size and load to be stored.





One-side access aisle

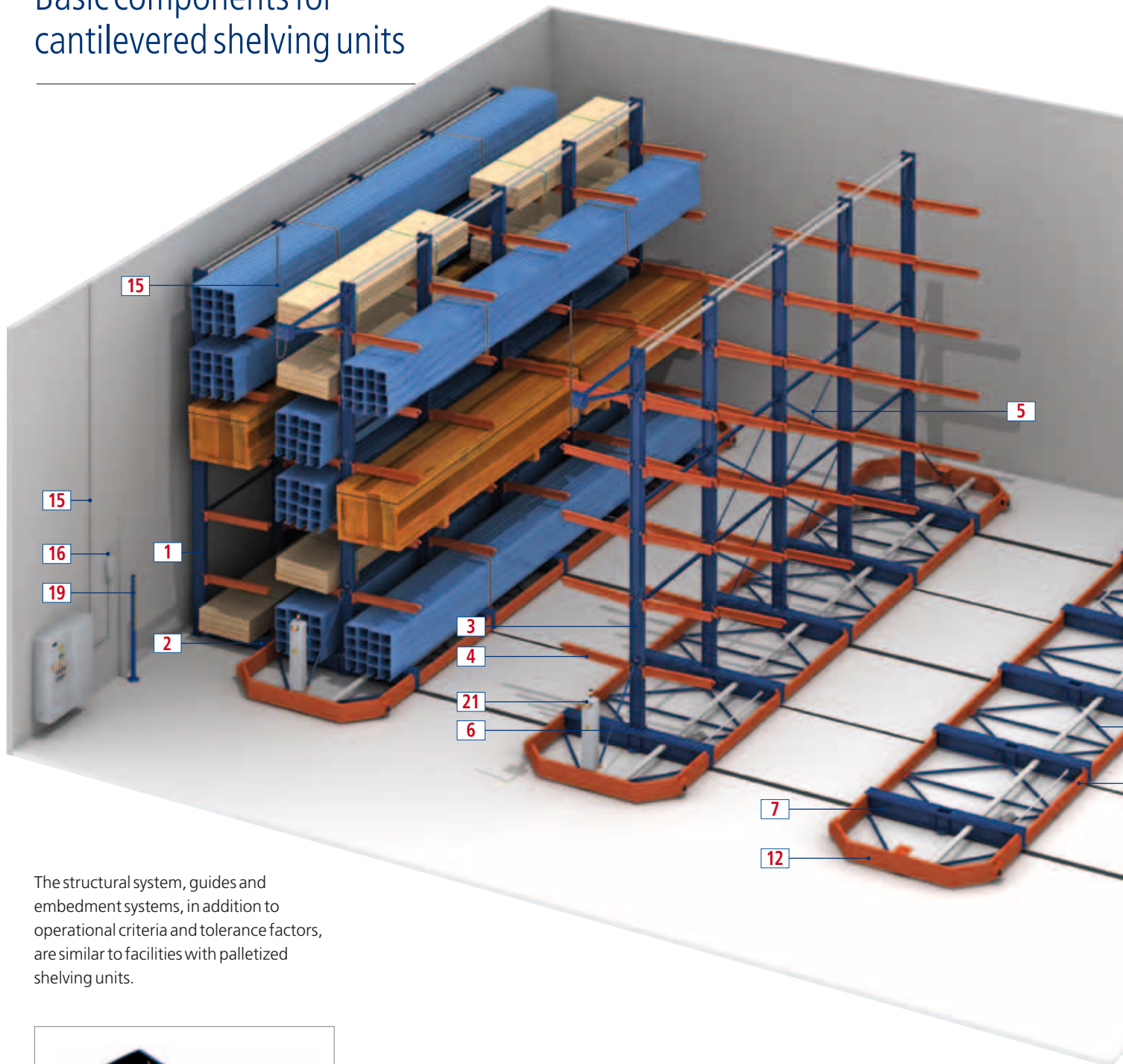
Since most facilities require a single man aisle in which to maneuver, shelving units are located perpendicular to the aisle with a minimum distance from the sidewalls of 8 inches.



Access aisle plus pedestrian walkway

When necessary, or for safety reasons, the unit closest to the wall can be cantilevered to free space below for a pedestrian walkway or a fire escape route.

Basic components for cantilevered shelving units



The structural system, guides and embedment systems, in addition to operational criteria and tolerance factors, are similar to facilities with palletized shelving units.

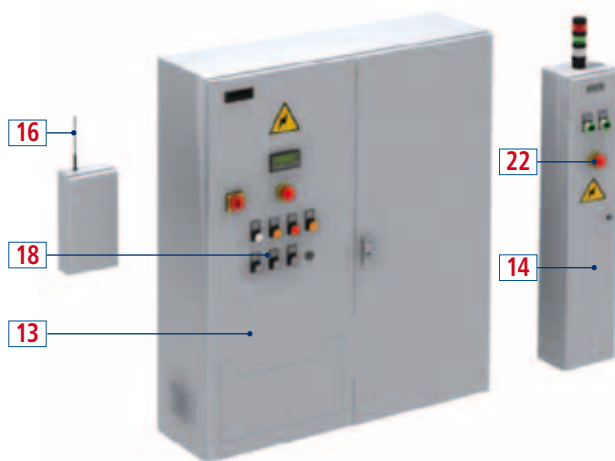
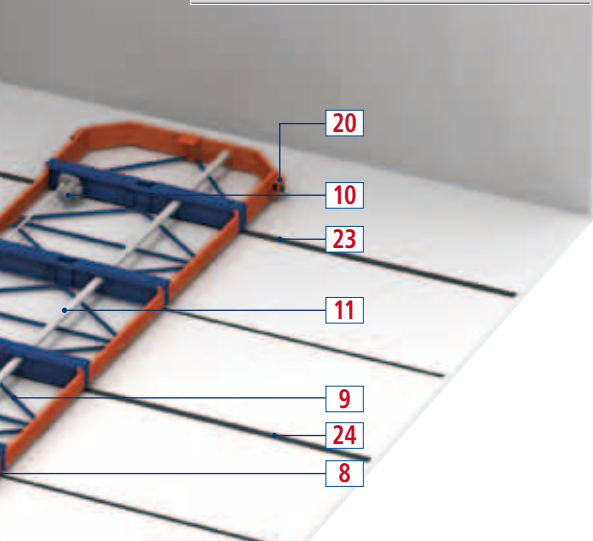
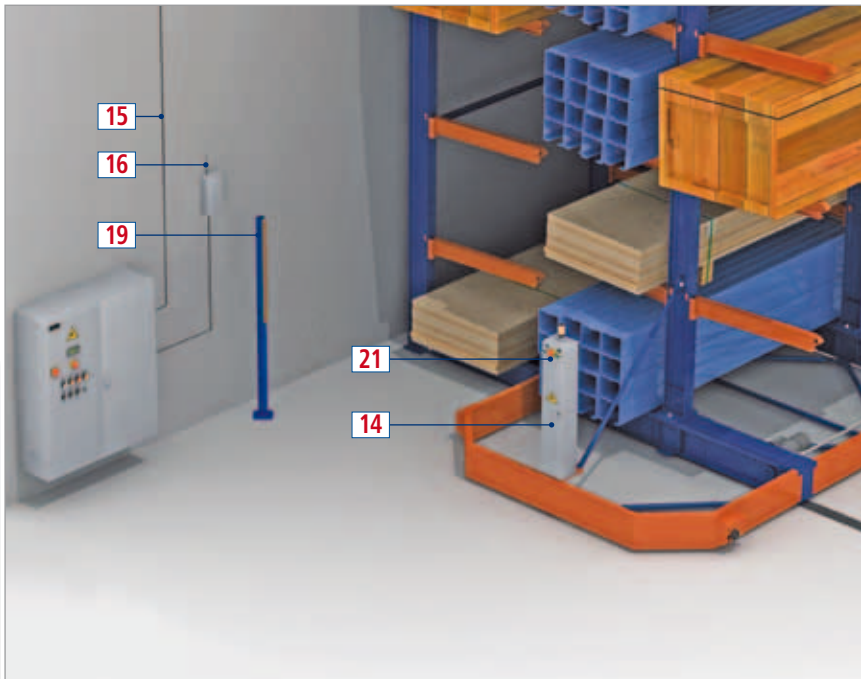


Shelves

- 1/Upright
- 2/Cantilever base
- 3/Double sided upright
- 4/Cantilever arm
- 5/Set of vertical braces
- 6/Anchorage or fasteners

Mobile bases

- 7/Carrier roller/driver/guide/extreme
- 8/Base beam
- 9/Rigidity bracing
- 10/Motor
- 11/Cable channel
- 12/Set of base brackets



Safety and control parts

- 13/Exterior main power panel
- 14/Remote power panel
- 15/Signal and power cables
- 16/Remote control antenna
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- 18/Control button pad
- 19/Exterior safety barrier
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- 21/Reset button
- 22/Emergency button

Built-in tracks

- 23/Roller tracks
- 24/Guide track





Exterior safety barrier

Controlling the facility

The basic features of the control system are found in the main power panel and the remote power panel. These ensure the mobile shelving units move safely and automatically.

The principal control features are:

- The PLC controller, the brains behind the facility and where the operational logic is programmed
- Power converters (synchronize the operations of the different Motors on the base, which provide a boost of acceleration and a smooth stop). These also lengthen the lifespan of several different components (motors, wheels, guides, etc.)
- Error control screen
- Aisle lighting panel (optional)



Remote Control

Controls opening or closing the aisles and can reset the system without having to get down from the forklift.

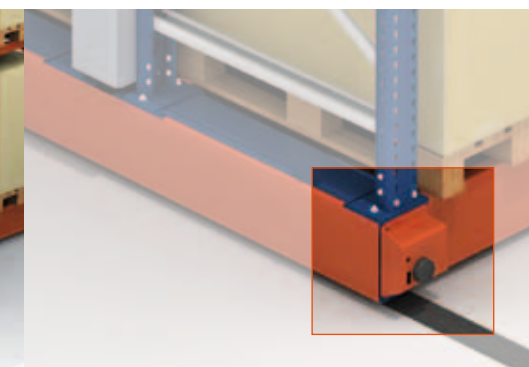
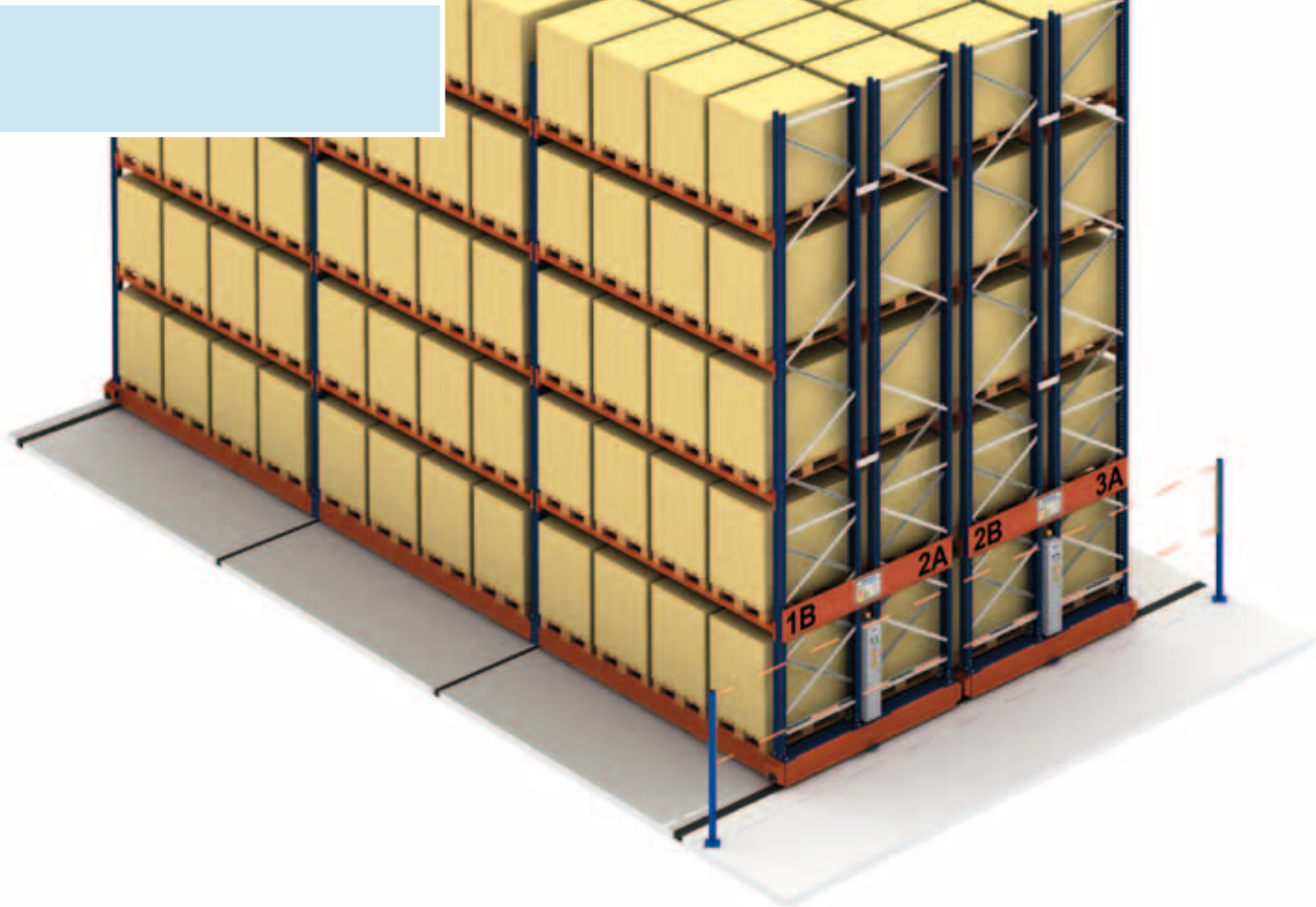
Safety Devices

The built-in safety devices conform to current safety standards and guarantee that mobile equipment is operated safely. Some of these include:

Exterior Safety Barrier

When the work aisle is open, anyone on foot or in a forklift will automatically cut the power to the units, preventing their movement.

The safety barrier can only be reset either by pressing the reset button or by remote control.



Interior Safety Barrier

On either side of the bases are longitudinal optic safety barriers which cover the entire front of the mobile shelving unit. This barrier detects the presence of foreign objects in the aisle which may impede safe operation and, in the event of an emergency, the bases automatically stop when the beam of light is interrupted.

Proximity photocell

This ensures a smooth, safe stop at the pre-programmed distance between aisles.



Reset Buttons

They are placed at the end of each aisle.



Emergency buttons

These are located in the remote power box and can stop the moving shelves in an emergency.



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